

We claim:

1. A process for the continuous recirculation of an olefin which has not been reacted in the epoxidation of olefins by means of hydroperoxide to give oxiranes and is present in the offgas stream formed during the epoxidation, which comprises the steps (i) to (iii)
 - (i) compressing and cooling the offgas stream,
 - (ii) separating the olefin from the offgas stream obtained in step (i) by distillation,
 - (iii) epoxidizing the olefin separated off in step (ii) by means of hydroperoxide.
2. A process as claimed in claim 1, wherein, in step (i), the offgas stream is compressed to a pressure of from 2 to 30 bar and cooled to from 0 to 70°C.
3. A process as claimed in claim 1 or 2, wherein compression occurs in at least two stages in step (i).
4. A process as claimed in any of claims 1 to 3, wherein the offgas stream comprises propene and propane.
5. A process as claimed in claim 4, wherein, in step (i), the offgas stream is cooled to from 30 to 40°C and compressed to a pressure of from 12 to 20 bar.
6. A process as claimed in claim 5, wherein the mixture of propene and propane obtained in the bottoms from the column after the distillation in step (ii) is separated into propene and propane in a C₃ splitter.
7. An apparatus for carrying out a process according to claim 6, which comprises at least one reactor for preparing propene oxide, at least one apparatus for compressing the offgas stream, at least one distillation column for separating propene and propane from the offgas stream and a C₃ splitter for separating propene and propane.